

all Canada and the north of the United States, and which was attended with considerable damage, the temperature fell at Ottawa to -30°o . What makes this temperature noteworthy is that at the same time the wind continued to blow with great violence, the low temperature being thus not confined to a few feet of the surface, but that of the aerial current passing over Ottawa at the time. On January 4 the temperature fell at Hernösand, in Sweden, and also in Lapland to -31°2 . An anticyclone of limited extent, with the characteristic calms and light winds, overspread this region at the time, and it is to be noted that the space of excessively low temperature embraced an area virtually coincident with, and equally as limited as, that of the anticyclone. Still lower temperatures are reported from the interior of Russia. The *Golos* gives the following information as to the unusually low temperatures which prevailed in Northern Russia before Christmas. The thermometer of the Physical Observatory at St. Petersburg (in town) showed on the 22nd, at 9 A.M., -37°8 Cels., and in the Botanical Garden (in the suburbs), between 7 and 9 A.M., the following temperatures were observed:— -38°1 on the 20th, -39°4 on the 21st, and -41°9 on the 22nd (-43°4 Fahr.). On the last-named day the mercury was frozen, and the readings were made from a spirit thermometer. So low a temperature as on the 22nd was never observed before at St. Petersburg in December, during the 123 years that regular meteorological observations have been made; and even during the coldest month, January, such low temperatures were observed before only four times, namely, -38° on January 26, 1868; -41° in 1760; -38°7 in 1772; and -39°o in 1814. The region of low temperatures occupied a very large tract of land, and the cold advanced from the north-east, as was also the case during the unusual cold of 1868. On the 22nd there was observed in the morning, -40°4 at Vologda, -40°5 at Kuopio, in Finland, -39°9 at Bielozersk, -39° in Moscow (-40° in the higher parts of the town), &c. Very low temperatures might have been predicted for some days before, as already on the 20th the cold reached -44° Cels. (-47° Fahr.) in Vologda, and the barometer continued to rise in the whole of Northern Europe, whilst a minimum of pressure traversed the middle parts of Europe and Southern Russia, with comparatively high temperatures and cyclonic winds, which in the north and on the shores of the Baltic blew from the east and the north.

NOTES

A WEALTHY Copenhagen brewer, J. C. Jacobsen, has given the sum of a million of crowns for the promotion of mathematics, natural science, the science of language, history, and philosophy.

As we intimated some time since, the Swedish University of Upsala, founded September 21, 1477, will this year celebrate its 400th anniversary. Great preparations are being made for the event. The University is not only the oldest but the richest in Scandinavia; besides many rich gifts from Gustavus Vasa, it received, among other things, from Gustavus Adolphus, 360 farms, which now yield an annual rent of 200,000 crowns. The funds for maintenance and salaries amounted, in 1870, to 1,758,587 crowns, and the yearly Government grant to 300,000 crowns. The teaching staff consists of thirty-five professors, twenty-seven adjuncts, and fifty docents; the number of matriculated students amounts to about 1,500.

THE Royal Cabinet of Natural History at Stuttgart has just been enriched with an exceedingly rare and valuable palaeontological specimen, which is probably without its like in the geological museums of the world. It consists of a group of twenty-four fossil lizards from the sandstone strata of Stuben. The

inclosing stone has been with great care entirely removed, showing a strangely intertwined mass, possibly as met by sudden death, but more probably a collection of dead bodies gathered together by the action of the waves. They cover a space of about two square yards, and the individual specimens possess an average length of thirty-two inches. These fossils can be classed with no existing species, but appear rather to possess a combination of diverse characteristics, which at a later stage of development became distinctive features of quite different types. Prominent among the peculiarities are the bones of the extremities, resembling those of existing lizards; the head, which can almost be called a bird's head, and the massive scaly armour, consisting of sixty to seventy successive rings.

WE notice with great pleasure that decided steps are about to be taken to reform the curriculum in Exeter Grammar School. It is intended, as soon as arrangements can be completed, that the younger boys shall be taught divinity, English, including history and geography, French, Latin, arithmetic, and the other elements of mathematics, drawing, and some elementary natural science. At a certain point in the school Greek will be added, in accordance with the provisions of the Scheme and the resolution of the Governors; or in lieu of the study of Greek more time will be devoted to mathematics, English, modern languages, and natural science. German will be taught to any boys sufficiently advanced in other subjects to make it desirable. Thus, it is hoped, boys will be adequately prepared for the Universities, for the Public Service, for professional or commercial life. The principle of this new scheme is excellent, and should it be faithfully carried out, Exeter Grammar School ought to become one of the most efficient and complete schools in the country. We hope that the school will receive every encouragement in this laudable effort to provide a complete course of instruction.

THE Vilna Observatory is reported to have been totally destroyed by a fire on December 28. The *Vilensky Vestnik* says that the combined efforts of the town and railway fire brigades, of the troops, and of the students of a college in the neighbourhood, did not succeed in overcoming the fire and rescuing the great refractor and photo-heliograph. Only books and instruments of smaller value were saved. This is a great loss to science, as the Observatory had done, during the last few years, very valuable work, and some of the beautiful photographs of the sun was exhibited at the South Kensington Loan Collection.

MR. F. B. MEEK, the eminent palaeontologist, and for several years a member of the United States Geological and Geographical Survey of the Territories, under Prof. F. V. Hayden, died at Washington, D.C., December 21, aged fifty-nine years. He had just completed the great work of his life, the Cretaceous and Tertiary Invertebrate Fossils of the Upper Missouri Country, in one large quarto volume.

IN the last Session of the Berlin *Anthropologische Gesellschaft*, Prof. Virchow stated that the intrepid young traveller, Herr v. Horn von der Horck, is at present in the camps of the war-like Sioux Indians, busily engaged in obtaining plaster casts for craniological studies. The printed record of v. d. Horck's journey of last summer to the Polar Sea, has just appeared in Germany, and contains much of value written in a very sprightly style. During the first half of the journey zoological and geographical ends were kept in view. On the return trip through Lapland to the Gulf of Bothnia, the expedition assumed an almost exclusively anthropological character. Enormous collections of bones and more especially of skulls were made, and a large number of masks were obtained from the present inhabitants of Lapland. So extensive and complete are these results, that Prof. Virchow regards them as more valuable for the study of Scandinavian craniology than the combined collections o

European museums outside of the Scandinavian countries themselves. The principal geographical result of the journey was the establishment of the fact that a continuous water communication exists between the Polar Sea and the Gulf of Bothnia. On the summit of the watershed between these bodies of water, the lake Wawolo Lampi lies at a height of 800-900 feet above the level of the sea. Two rivers flow from this, one to the north, emptying into the Ivallo, and the other to the south, emptying into the Kititui. Frequent cascades and rapids render this waterway useless for purposes of navigation.

PROF. PALMIERI—the *Times* correspondent at Rome telegraphs on January 7—writing from the Observatory on Mount Vesuvius, says that for the last two days the instruments have shown evident signs of agitation. The smoke from the mountain is issuing with greater force and increased volume. In the interior of the last mouth, opened on December 18, 1865, the fire is no longer visible, in consequence of an immense amount of material having fallen into it, through the giving way of a portion of the crater of 1872. An extraordinary eruptive force will, therefore, be necessary either to make a way through the enormous accumulation of sand and scoriae or to open some new mouth, whether on the summit or the side of the volcano. In the meantime, the cone is manifest, but it cannot be stated when it will reach a point sufficient to overcome the resistance.

M. FAYE has been appointed president of the *Bureau des Longitudes* for 1877, and Dr. Janssen vice-president.

A SUBSCRIPTION has been opened at Rouen for the erection of a statue to M. Pouchet, the naturalist, who was the director of the Botanic Gardens of that city, and who died ten years ago. M. Pouchet, as a correspondent of the Academy of Sciences, published many papers in defence of spontaneous generation against M. Pasteur. His works are referred to by Haeckel and Bastian.

AN Admiralty Committee of Inquiry has been appointed in connection with the outbreak of scurvy in the Arctic expedition.

AT the meeting of the Geographical Society on Monday, Mr. Robert Michell read a paper on "The Russian Expedition to the Alai and Pamir." The expedition resulted in much interesting information, which was mentioned in detail, as to the physical features of the country. The president, in winding up the discussion, observed that the regions visited by the expedition and described in the paper were, perhaps, the least known in Central Asia. They contained vast and confused ranges of mountains, some of the peaks of which were among the highest in the world. He trusted that when further expeditions of the kind were organised, steps would be taken by our government to secure that at least two Englishmen of requisite scientific attainment should be allowed to accompany them.

A RECENT thorough survey of the Kasbek-glacier of the Caucasus, has proved that since 1863 it has increased, i.e., its lower extremity has advanced down the valley, by 826 feet.

THE *Medizinisch-ätiologische Verein* of Berlin decided, in the session of January 4, to call together during the present year an aetiological congress. The following four subjects are announced as the principal topics for the coming conference:—1. Methods of aetiological investigation. 2. Causes of epidemic disease dependent upon mankind. 3. The natural conditions of epidemic diseases. 4. On the *Contagium vivum*.

AT the January session of the Vienna *Zoologisch-botanische Gesellschaft* papers were read by Herr J. Mann "On the Lepidopterous Fauna of the Dolomite Region," and by Prof. Jeitteles "On Treissena Polymorpha."

DR. BREHM, the enterprising Siberian explorer, is at present

delivering in the principal German cities, a course of six lectures on the results of his last tour through Northern Asia.

PROF. KLEIN, one of the most promising among the younger German mineralogists, has accepted a call to the professorship of crystallography at the University of Halle.

AUSTRIA follows Germany and other countries in accepting the invitation of the King of Belgium, and an *Afrikanische Gesellschaft* has been organised at Vienna.

THE German Imperial Sanitary Department commences, with the beginning of the present year, the publication of a weekly periodical devoted to sanitary statistics and all subjects connected with the preservation of the public health. Prompt official reports of the mortality in all cities numbering over 150,000 inhabitants, will form a leading feature.

THE Municipal Council of Paris, determined to spare no efforts in order to prevent fresh inundations, have voted the funds for boring a new sewer, or rather a tunnel, which will be utilised for discharging a portion of the Seine, below Paris.

The plan for the rebuilding of the *École de Medicine* is now ready to be presented to the Municipal Council of Paris. When all the works are completed the total surface covered will be 8,000 square yards; it does not now exceed 3,000. The expense will be 4,300,000 francs.

AN interesting article, by Mr. E. A. Barber, with some curious illustrations, on "The Rock Inscriptions of the Ancient Pueblos of the Colorado, Utah, New Mexico, and Arizona," will be found in the *American Naturalist* for December.

In an article in the *Révue Scientifique* of January 6, M. H. Le Chatelier shows that there is no geological evidence for the existence of a great inland sea in North Africa, though there was probably in the district of the Tunisian Chotts, at one time, a small isolated salt lake. All the phenomena of the region of the Chotts and of the Sahara may be explained by the action of existing forces, which might at some future time cause a thin layer of salt water to reaccumulate over a small extent of surface.

WITH reference to our note (NATURE, vol. xv. p. 167) on Mr. Allen's work on the North American Bisons, which we stated was issued by the University Press, Cambridge, U.S., we are informed that this "University Press" has no relation with the University. It is simply a name denoting its position near the University grounds to distinguish it from another large printing establishment known as the "Riverside Press," also at Cambridge. The memoir noticed formed a part of the "Memoirs" issued by the "Museum of Comparative Zoology," which have taken the place of the former "Illustrated Catalogues," the title having been changed so as to enlarge the scope of the 4to. publications of the old numbers of the Catalogue collected into volumes to form the first volumes of the Memoirs.

ON December 20, the Bremer *Verein für die deutsche Nordpolfahrt*, changed its name to that of *Bremer geographische Gesellschaft*. The question of Polar exploration has assumed such dimensions that a private society cannot hope to accomplish much unaided in this direction. The society will henceforth devote its energies to the solution of geographical problems in other parts of the world. Its occasional communications are also to be replaced by a regular periodical appearing quarterly, under the editorial supervision of Dr. Moriz Lindeman. A special feature of the new society will consist in frequent courses of lectures from the most famous of recent explorers; Brehm, Güssfeldt, and Baron von Schleinitz, are announced as first on the list.

LATE letters from Sydney report the arrival of the Rev. G. Brown, who has been spending the last year in Polynesia, passing from one island to another in the mission brig *John Wesley*. Many interesting discoveries were made in the islands of New Britain and New Ireland. The inhabitants of both islands are

cannibals, but indulge in the custom in order to show their complete mastery over their enemies, and not from a preference for human flesh. New Britain was coasted entirely and crossed several times. The interior is hilly, the loftiest point being 2,500 feet high. It is well populated, and the natives expressed the usual surprise at seeing white men for the first time. The tribe at Blanchi Bay informed the travellers of another tribe at some distance from the coast, who were provided with caudal appendages of an exceedingly remarkable character, and promised to obtain a specimen before the next visit of the brig. At another place, the wealthier families among the natives were accustomed to confine their daughters for several years before the attainment of puberty in tabooed houses, not allowing them to put foot upon the ground during the whole period. A superior tribe was encountered at Spacious Bay, with lighter complexions and straighter hair than their neighbours. Both sexes wore partial clothing. Large collections were brought back illustrating most fully the geology, the fauna, and the rich tropical flora of the islands.

M. CLEMENT GANNEAU, who has recently been in London to study the Semitic monuments in the British Museum, writes to the *Times* animadverting on the complete want of system in their arrangement. The Semitic remains are scattered among other collections in such a way as to make their examination a work of the greatest difficulty, whereas were they properly classified and arranged by themselves they would form a Semitic Room without a rival.

THE Geographical Society of St. Petersburg has received a telegram from Prjevalsky announcing that he has crossed the Thian Shan, and, on October 14, was fifty versts from Karashar. The country he was then in is a desert.

M. WADDINGTON, French Minister of Public Instruction, is busy fitting up a large pedagogical museum, which will be located in the hotel of the Ministry, and be open to the inspection of any scientific men interested in the progress of pedagogy.

THE first portion of the German *Jahresbericht über die Fortschritte der Chemie*, for 1875, containing 480 pages, about one-third of the complete work, has just been issued. General and physical chemistry receives 150 pages, inorganic chemistry, 80 pages, while the remainder of the number is devoted to organic chemistry, which will also occupy the greater portion of the second number. Prof. Fittica, of Marburg, assumes, with the volume for 1875, the chief editorial supervision, and is assisted by the following able corps:—K. Birnbaum, C. Böttlinger, C. Hell, H. Klinger, A. Lauberheimer, E. Ludwig, A. Michaelis, A. Naumann, F. Nies, H. Solkowski, Z. H. Skraup, and K. Zöppritz. Complete sets of the *Jahresbericht* are difficult to obtain now as seven years' numbers are out of print. A perfect set from 1847 to the present date, with the two registers, costs from 500 to 600 marks in Germany. The editor requests from the authors of chemical articles separate copies of their communications in order to lighten the labour of classification and compilation.

WE have received vol. i. of the *Proceedings* of the Davenport (Iowa, U.S.) Academy of Natural Sciences. This Academy had a very small beginning in 1867, but is now in a flourishing condition. The volume contains the proceedings from 1867 to 1876, and includes some papers of real value, especially on mound exploration. The number of scientific societies in the U.S. issuing publications containing papers of genuine scientific importance is now large, and constantly increasing.

THE artificial lighting of rooms affects the human system, on the one hand, through the change produced in the composition of the air by gases of combustion, and on the other through rise of temperature. These influences have lately been examined by M. Erismann (*Zeitschrift für Biologie*). In a part of the laboratory 10 cubic metres' capacity, inclosed by wooden and glass

walls, various materials were burnt eight hours, viz., stearine candles (six at a time), rape oil, petroleum, and ordinary gas, and the air was drawn off at different heights and analysed. The results do not pretend to absolute exactness, but a comparison of them is interesting. The tables first show that under all circumstances, and with all sorts of artificial lighting, the air of an inclosed space contains more carbonic acid and organic carbon-containing substances than in absence of such illumination; still, in these experiments the carbonic acid was never greater than 0·6 or 0·7 per 1,000, while the proportion of other carbon compounds was very variable, so that the amount of carbonic acid gives no exact criterion for the vitiation of the air. The CO₂ actually found in the air was only a very small fraction of that produced by the combustion; by far the greatest part must have been carried away by the natural ventilation. In comparing the four materials, the proportion of CO₂ and other carbon compounds was reduced to a light strength of six normal candles. It appeared that the petroleum, with lamp of good construction, communicates to the atmosphere, not only less CO₂, but (what is much more important) fewer products of imperfect combustion than the other lighting materials; and, further, that stearine candles, with the same light-strength, vitiate the air most. As to temperature, that of the lower layers of air, up to a height of 1·5 metres, rose very little during the eight hours, about 2° to 3° on an average, while the upper layers increased considerably in temperature, especially just under the ceiling; this increase, in the case of ordinary gas, rape oil, and petroleum, was 10·5° to 10·8°, in that of candles only 4°. If, however, we take into account the photometric light-effect of the flames during the experiment, it is found that, with equal light-strength, rape oil and gas raise the temperature considerably more than petroleum, and the action of the latter, indeed, came to about that of the candles.

THE additions to the Zoological Gardens during the past week include an American Black Bear (*Ursus americanus*) from North America, presented by Mr. W. Stead; a Common Partridge (*Perdix cinerea*), European, presented by Mr. H. Laver; a Razor-bill (*Alca torda*), European, presented by Mr. W. Thompson; two Common Swans (*Cygnus olor*), a Common Cross-bill (*Loxia curvirostra*), European, purchased.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, January 2.—Prof. Newton, F.R.S., vice-president, in the chair.—Prof. Newton exhibited and made remarks on a specimen of a variety of the guillemot (*Alca troile*) with yellow bill and legs, which had been lately shot by Mr. J. M. Pike on the south coast of England.—Prof. Garrod, F.R.S., read a paper on the osteology and visceral anatomy of the Ruminantia, in which many facts concerning the anatomy of the Cervidae and the Cavicornia were brought forward, especially with reference to the shape of the liver and the structure of the generative organs in these animals. Among the most important of these was the observation that the uterine mucous membrane of the musk-deer (*Moschus moschiferus*) presents no indications of the presence of cotyledons, the contrary being the case in all other ruminants. Prof. Garrod likewise made a suggestion as to a proposed method of expressing the relations of species by means of formulæ.—A paper by Messrs. Sclater and Salvin was read containing the descriptions of eight new species of South American birds, namely (1), *Euphonia finschi*; (2), *Pheucticus crissalis*; (3), *Octhaca leucometopa*; (4), *Octhaca arenacea*; (5), *Chlororhynchus dignus*; (6), *Celeus subflavus*; (7), *Chamaezelia buckleyi*; (8), *Crax erythrogaster*.—Mr. R. Bowdler Sharpe read a paper on some new species of warblers from Madagascar, which had been recently added to the collection in the British Museum, and were proposed to be called *Apalis ceroviniventris*, *Baocera flaviventris*, and *Dromaeocercus brunneus*, the last-named being a new genus, from Madagascar.—A communication was read from Mr. G. S. Brady, containing notes on fresh-water mites which had been obtained from lakes and ponds in England and Ireland.

Royal Microscopical Society, January 3.—Charles Brooke, F.R.S., vice-president, in the chair.—Dr. Wallich read a paper